

Date: Fri, 1 Oct 93 04:30:33 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #61
To: Ham-Homebrew

Ham-Homebrew Digest Fri, 1 Oct 93 Volume 93 : Issue 61

Today's Topics:

 Anyone interested in discussing PLL synt (2 msgs)
 Cavity amplifier design
 high speed datalink (2 msgs)
 Rick Campbell's R2/T2
 sideband filtering

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 29 Sep 93 13:58:25 CDT
From: timbuk.cray.com!hemlock.cray.com!cherry10!dadams@uunet.uu.net
Subject: Anyone interested in discussing PLL synt
To: ham-homebrew@ucsd.edu

In article aqe@hpscit.sc.hp.com, rkarlqu@scd.hp.com (Richard Karlquist) writes:

..text deleted..

>The sampling phase detector allows them to get around the traditional problem
>you have with reference frequency sidebands. Unfortunately, most ham designs
>use digital phase detectors patterned after the 4044. BTW, the MC145159
>synthesizer chip with sampling phase detector has a bug in it, so if you
>use it, be aware of the bug. The Philips sampling synthesizer chips have
>their own problems.
>

How does the MC44802 compare?

--David C. Adams Statistician Cray Research Inc. dadams@cray.com

Kilo Golf Zero India Oscar -(KG0IO)-

Date: 29 Sep 1993 21:56:02 GMT

From: dog.ee.lbl.gov!agate!howland.reston.ans.net!vixen.cso.uiuc.edu!sdd.hp.com!

col.hp.com!news.dtc.hp.com!hpscit.sc.hp.com!rkarlqu@network.ucsd.edu

Subject: Anyone interested in discussing PLL synt

To: ham-homebrew@ucsd.edu

In article <1993Sep29.135825.27759@hemlock.cray.com>,

David Adams <dadams@cray.com> wrote:

> article aqe@hpscit.sc.hp.com, rkarlqu@scd.hp.com (Richard Karlquist) writes:

>

>

> ..text deleted..

>

>

>>The sampling phase detector allows them to get around the traditional problem
>>you have with reference frequency sidebands. Unfortunately, most ham designs
>>use digital phase detectors patterned after the 4044. BTW, the MC145159
>>synthesizer chip with sampling phase detector has a bug in it, so if you
>>use it, be aware of the bug. The Philips sampling synthesizer chips have
>>their own problems.

>>

>

>How does the MC44802 compare?

>---

>--David C. Adams Statistician Cray Research Inc. dadams@cray.com

> Kilo Golf Zero India Oscar -(KG0IO)-

The MC44802 has a "Tri-State Phase Comparator" (as described on the data sheet), which means it is patterned after the 4044 phase detector, and will have the usual problem with reference frequency sidebands. That, along with the fixed divide by 8 prescaler and choice of only four reference frequency division ratios makes it fairly useless for ham work, IMHO. BTW, "Tri-State" is a trademark of National Semiconductor which Motorola blatantly pirated in their data sheet.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

Date: Wed, 29 Sep 1993 20:17:27 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!gatech!kd4nc!ke4zv!
gary@network.ucsd.edu
Subject: Cavity amplifier design
To: ham-homebrew@ucsd.edu

In article <29SEP199307483074@estd.nrl.navy.mil> malouf@estd.nrl.navy.mil (MALOUF, PERRY) writes:

>>For a long time I'm looking for the mathematics behind amplifier cavity
>>design. Designing an amplifier with a 1/4 (3/4 or 5/4) wavelength Lecher is
>>not a problem. The mathematics and formulas are widely available.
>>Theory and practice coincide well.
>>Looking at several cavity designs of tube amplifiers in the 1 - 3 GHz range
>>it seems that one mode is common: TEM101 (I'm not sure if this is correct).
>>One can determine that for a circular cavity the diameter is related
>>to half the wavelength and depends on the capacitance of the tube being used.
>>The height, mostly fixed due to the physical properties of the tubes,
>>determines the cavity impedance, I'm told.
>>I asked numerous SHF-heroes about the formulas behind the cavities. Nobody
>>could give me a satisfying answer. In fact, most 'designers' admitted that
>>they used the trial and error approach.
>>Looking in several books (electronic engeneering, physics, etc) the theory
>>behind cavities is explained. But I've never seen a publication where
>>a tube (read: capacitance) is introduced and with what effect on the physical
>>properties of the cavity.
>>I want to design an amplifier for 1296 MHz (23 cm amateurband) with a tube
>>but I don't want to use the 3/4:5/4 wavelength approach.
>>
>I'm not familiar with some of the terms (e.g. Lecher) you're using,
>and your brief description wasn't enough to allow me to fully
>understand your application. Therefore I cannot address your
>problem directly.

Lecher wires are an open wire transmission line segment with a movable short used as a impedance transformer. This was a common way to measure the wavelength of a microwave signal in the old days. Wavelength was read directly from an attached meter stick when the short produced a dip on a diode detector. Using them for a tank circuit is a straight forward application of the Smith Chart.

[list of reasons an analytic solution is difficult deleted]

I'll second that list. This problem is not easily amenable to

analysis. There are a few special cases where it's somewhat easier. Look at a re-entrant post cavity design. Use the plate output capacitance as the post loading capacitor. That'll get you a resonant design. Unfortunately it tells you little about the position or shape and size of the output coupling loop. That's going to be cut and try. With ordinary open cavities, the major problem is parasitic responses. The usual cure is to place passive "paddles" in the cavity at the proper point to break the undesired resonant mode. The tube makers usually supply a tech note with a working cavity design for their product. You can often just scale it to your frequency, but you'll still have to use some cut and try to get the final circuit to work properly.

Gary

--
Gary Coffman KE4ZV | "If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam." | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

Date: 1 Oct 93 01:58:42 GMT
From: ogicse!uwm.edu!spool.mu.edu!agate!usenet.ins.cwru.edu!odin!
trier@network.ucsd.edu
Subject: high speed datalink
To: ham-homebrew@ucsd.edu

In article <27qf9iINNsl4@matt.ksu.ksu.edu>,
Eric L Patterson <electro@matt.ksu.ksu.edu> wrote:
>Does anyone have plans, or know where to get plans for a
>high speed 1.2 - 2.4G 1Mb/s (or faster) datalink? Preferably
>ethernet interface, but I'll take any other interface.

This isn't much like what you asked for, but the 1993 ARRL Handbook has a description of a 10GHz 2Mb/s datalink plus voice channel. I dunno if that's remotely applicable to your application, though! :-)

Stephen

--
Stephen Trier KB8PWA My other terminal is an ADM-3A.
Work: trier@ins.cwru.edu
Home: sct@po.cwru.edu :-)

Date: Wed, 29 Sep 1993 11:54:57 GMT
From: news.service.uci.edu!paris.ics.uci.edu!csulb.edu!library.ucla.edu!agate!
spool.mu.edu!olivea!koriel!sh.wide!wnoc-snd-ss2!sakunami!gatortia!wapiko!jf7pbw!
yummyum!jf7wex@network.ucsd.edu
Subject: high speed datalink
To: ham-homebrew@ucsd.edu

In article <27qf9iINNsl4@matt.ksu.ksu.edu> electro@matt.ksu.ksu.edu (Eric L Patterson) writes:

Does anyone have plans, or know where to get plans for a high speed 1.2 - 2.4G 1Mb/s (or faster) datalink? Preferably ethernet interface, but I'll take any other interface.

I have a plan agrees just your frequency and speed with some designs using inexpensive chips for consumer products, a plan which has not been applied any of interface to TNCs or computers and not completed yet.

Unfortunately, since I have not enough time now to carry out the plan for high speed packet, completely or even to write a whole diagram, It will take much more time...

Another plan which is probably applicable up to 500kbps using FSK is in progress, but it has not come to whole diagram. Partly drawn diagrams with the TNC-Z, digital filters, a modulator and a demodulator, will be available at PARTECH, PAcket Radio TECHnical conference, in the next month in Japan. (JE1WAZ designed the TNC-Z which can handle up to 2Mbps. Some digital filters were designed by JN1JDZ.)

I just finished writing a paper for the conference.

Ryuji Suzuki JF7WEX
Packet Radio User's Group

Date: 30 SEP 93 18:39:02 GMT
From: tribune.usask.ca!skyfox!koehler@decwrl.dec.com
Subject: Rick Campbell's R2/T2
To: ham-homebrew@ucsd.edu

Second try - didn't realize BULLETIN doesn't autoformat

Anyway ... I did write to the address specified in the QST articles for information about kits. I got

no reply to two letters written several months apart. I guess there aren't any kits! Matching inductors isn't a big problem but its costly to buy large quantities just to find matched pairs.

Jim, VE5FP

Date: Sun, 26 Sep 1993 18:04:57 GMT
From: elroy.jpl.nasa.gov!usc!howland.reston.ans.net!darwin.sura.net!
perot.mtsu.edu!raider!theporch!jackatak!root@decwrl.dec.com
Subject: sideband filtering
To: ham-homebrew@ucsd.edu

Maybe I was born too early, but I never worried about sideband until it was in common use ;^) I built a BFO (Beat Frequency Oscillator for the uninitiated or "morsely impaired ;^) circuit for a super-het receiver as a kid so I could hear the CW rather than listen to hisses. The detector was simply aware of signal or no signal, and the BFO "beat" against the signal when it was there ("beeeeep") and was silent when no signal was present...too simple to worry about, I guess... Then too, I had visual cues as well... the old green winking eye on that Zenith could track CW to about 10 words per minute... probably explains why it took so long to get my general... ;^)

73, Jack/W4PPT

+-----+
Jack GF Hill	Voice: (615) 459-2636 - Ham Call: W4PPT
P. O. Box 1685	Modem: (615) 377-5980 - Bicycling and SCUBA Diving
Brentwood, TN 37024	Fax: (615) 459-0038 - Life Member - ARRL
root@jackatak.raider.net - "Plus ca changer, plus c'est la meme chose"	
+-----+

End of Ham-Homebrew Digest V93 #61
